ASX ANNOUNCEMENT

31 March 2023

EXCELLENT METALLURGICAL TESTWORK RESULTS WILL SIGNIFICANTLY IMPROVE PEA OUTCOMES

Key Highlights

- **MRG is progressing well with programs to significantly improve the NPV that will be generated from an updated Preliminary Economic Assessment (PEA).**
- **The Company has completed highly successful metallurgical testwork on non-magnetic concentrate that had been assigned a low value in the existing PEA.**
- **These metallurgy results are expected to significantly and positively impact the economic model to be associated with an updated PEA.**
- **TZMI calculated value for combined Zircon and Rutile non-magnetic products are now more than USD$900 per ton, up from approximately USD$350 per ton used in the PEA, with additional work to be done, including on the Monazite in the magnetic rejects, to determine value.**
- **Further metallurgy results are expected shortly from sighter testwork at newly discovered Azaria and Malambane deposits, where substantially higher VHM mineralogy has been discovered and is being progressed in anticipation of providing further upside into an updated PEA.**

Technical Highlights:

- **Using single stage RER magnetic separation, excellent results were returned on the non-magnetic fraction, including:**
  - **The RER processing reduced the mass of the non-magnetic fraction by 39.8% of the mass, in the process 97.5% of the Fe_2O_3, 95.1% of the CeO_2 and 75.6% of the Al_2O_3 were removed to the magnetic stream with a loss of only 4% of the ZrO_2.**
  - **Greater than 90% of the Monazite reported to the magnetic rejects, reducing the U and Th from 5,293ppm to 1,212ppm in the post RER concentrate.**
  - **The non-magnetic stream had a ZrO_2+HfO_2 grade of 47.87% equating to an approximate Zircon content of 72.5%, up from 45.5% Zircon in the pre-RER processing non-magnetic concentrate.**
  - **There was a recovery of 60.3% of the TiO_2 to the non-magnetic stream. The ratio of TiO_2 to Fe_2O_3 in the non-magnetic stream indicates that this is associated with high TiO_2 and low Fe_2O_3 mineral, rutile and HiTi/leucoxene. The TiO_2 reporting to the magnetic fraction is likely secondary type ilmenite.**

- **The grades and distributions of the Cr_2O_3 are notable with 98.3% of the Cr_2O_3 reporting to the magnetics at a grade of 4.05%.**

- **Post RER separation, the non-magnetic stream was further processed to isolate potential zircon and rutile products by primary stage of electrostatic separation to separate the TiO_2-bearing minerals from the zircon. The two streams were then processed through stages of gravity, electrostatic and magnetic separation. Results from this processing indicates excellent Zircon and Rutile products:**
  - **The processing recovered a high-grade zircon product with a ZrO_2+HfO_2 grade of 66.2%. The grades of TiO_2 and Fe_2O_3 in this were less than 0.1% and the grade of Al_2O_3 was 0.12%. The combined grade of U and Th was 398ppm.**
  - **The processing recovered a high-grade rutile product with a TiO_2 grade of 95.5% and Fe_2O_3 grade of 0.49%. The product had a SiO_2 grade of 1.26% and a ZrO_2 grade of 0.5%. Other contaminants were V_2O_5 at 0.39% and Cr_2O_3 at 0.23%. The combined grade of U and Th was 60ppm.**
  - **Importantly, this non-optimised process testing clearly shows optimised processing will reduce the aluminosilicates in the Zircon product grade streams and the SiO_2, Al_2O_3 and ZrO_2 in the rutile product grade streams.**

MRG Metals Limited ("**MRG**" or "**the Company**") (**ASX Code: MRQ**) is pleased to announce excellent sighter metallurgical test results from AML Laboratories on the non-magnetic fraction generated during bulk sample metallurgical testwork carried out by IHC Mining for the Scoping Study and PEA (**refer ASX Announcements 31 August 2022 and 2 November 2022**).

Previous Scoping and PEA testwork conducted at IHC Mining on a bulk sample generated from the Koko Massava deposit produced a non-magnetic concentrate as a potential product stream. The valuable mineral in the concentrate was predominantly zircon, with rutile as a secondary product. The concentrate was degraded by high grades of U and Th associated with monazite and with aluminosilicates.

The objective of the sighter testwork was to investigate potential product grades in the concentrate and to identify potential issues that would impact the grade and recoveries of those products. The sample used for the sighter testwork (**Figure 1**) was a composite of processing streams reconstituted to a non-magnetic concentrate by IHC Mining (**Table 1**).

MRG contracted Allied Mineral Laboratories Pty Ltd (**AML**) in Western Australia to conduct additional sighter metallurgical testwork on the non-magnetic fraction generated in the PEA metallurgical study to:

- **Increase the concentration of Rutile and Zircon in the non-magnetic fraction by removing key contaminants, Fe2O3 and Al2O3;**

- **Reduce the amount of Monazite, and hence the U and Th in the non-magnetic fraction; and**
- **To study the post processing Zircon product quality.**

The sighter metallurgical testing involved single stage RER magnetic separation on the non-magnetic concentrate, followed by primary stage of electrostatic separation on the nonmag stream to further isolate potential zircon and rutile products by to separate the TiO2 bearing minerals from the zircon. The two streams were then processed through stages of gravity, electrostatic and magnetic separation to isolate potential zircon and rutile products.

The RER magnetic separation work resulted in upgrading the nonmag by a significant reduction in mass of the nonmag concentrate by removing deleterious minerals such as aluminosilicates and Monazite, as well as significant reductions in Fe_2O_3 and Cr_2O_3. The electrostatic separation, followed by gravity, electrostatic and magnetic separation, resulted in a number of near Zircon and Rutile product streams. Further optimised testing will result in upgrading the Zircon and Rutile streams further. Testwork on optimising a Monazite product from the reject magnetic stream needs to still take place.

TZMI estimated the unit prices of ZrO2 and TiO2 at US$15.95 per % and US$8.12 per % respectively, multiply the values against the ZrO2 (47.9%) and TiO2 (15.4%) content of the non-magnetic concentrate, to a total value of more than USD1,000 per ton.

MRG Metals Chairman, Mr Andrew Van Der Zwan said: *"The Metallurgy test work completed as part of last year's scoping study was a necessary early stage determination of the Corridor sands productivity. Our focus at the time was to refine the Magnetic concentration and separation process to deliver the best Ilmenite product possible. While we are confident that further refinement of the Magnetic process will deliver a desired Ilmenite product with greater than 50% TiO2, we have now put further emphasis on the Non-Magnetic concentrate as the 20 MT/annum throughput designed in the scoping study produced almost 50KT/Year of low grade Non-magnetic concentrate. Due to timing we had to recognise this product in the Scoping study with a low valuation of product value, circa USD$350/Tonne. Hence our work now with TZMI to move this product up the value curve. We are now confident that we will be able to deliver significant product enhancement such that the final Non-Magnetic product at above USD$900/T, with only minor changes to the Non Mag process flow. Add to this product enhancement the fact that our recent discoveries at Azaria and Malambane promise to deliver twice the Zircon and Rutile content per % of HMS, we see considerable uplift in both quantity and value of Non-magnetic concentrate in the next stages of project evaluation."*

Summary of testwork and results

The following comments are made based on the results of the initial sighter testwork on the non-magnetic concentrate:

- The grade of the reconstituted non-magnetic sample closely matched the results from IHC Mining for the same sample (**Table 1**). The exception to this is the CaO grade of 0.59% measured by AML compared to the 0.05% in the Reported (IHC) assay. While this may warrant further investigation, the distribution of CaO in the primary separation stage was 85% reporting to mag rejects, therefore did not adversely affect the grades of products in the context of this sighter.
- The non-magnetic concentrate had a ZrO_2+HfO_2 grade of 30%, equating to an approximate zircon content of 45.5%. The grade of TiO_2 in the sample was 16.7% and the grade of Fe_2O_3 was 14.1% (**Refer ASX Announcement 31 August 2022**).
- The principle contaminant minerals in the concentrate were aluminosilicates, both para-magnetic and non-magnetic with the associated oxides Al_2O_3, SiO_2 and Fe_2O_3. Additionally, the sample had a high grade of monazite, associated with the oxides CeO_2, P_2O_5 and Th. A calculation of the monazite content based on an approximate CeO_2 content of 26% in monazite was 7.1%. The combined grades of U and Th in the was 5,293 ppm.
- The primary process tested in the sighter metallurgical testwork was a single stage of magnetic separation using an RER magnetic separator (**Figure 1**). The process sought to reduce the grades of U and Th through the rejection of monazite to a magnetic reject. Additionally, this process would reduce the mass and increase the grades of zircon in rutile in the concentrate through the rejection of para-magnetic gangue mineral.

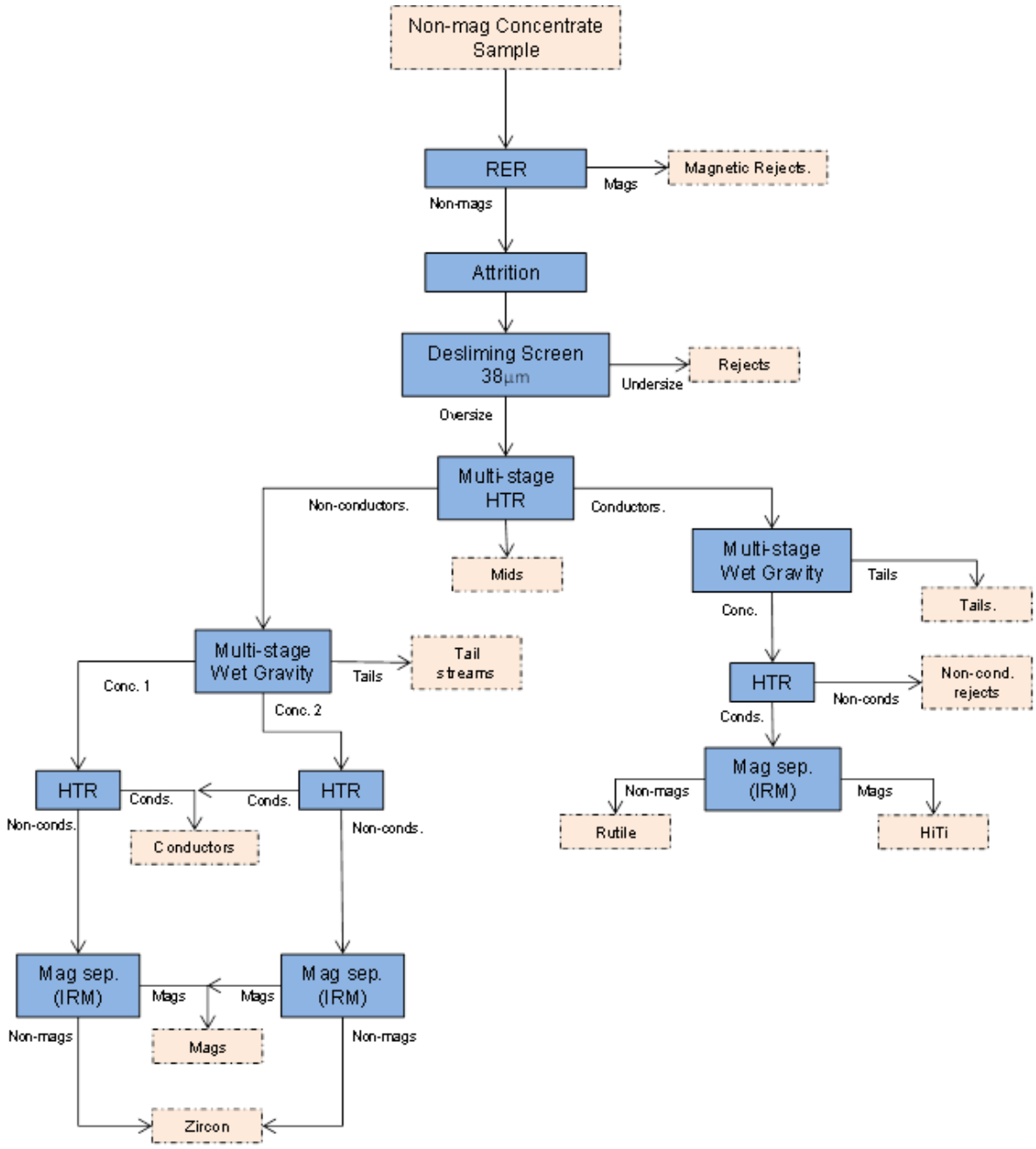


Figure 1: Met testwork flowsheet

- The processing rejected 39.8% of the mass, 97.5% of the Fe_2O_3, 95.1% of the CeO_2 and 75.6% of the Al_2O_3 to the magnetic stream with a loss of 4% of the ZrO_2 (**Table 2**). The non-magnetic stream had a ZrO_2+HfO_2 grade of 47.87% equating to an approximate zircon content of 72.5%.
- There was a recovery of 60.3% of the TiO_2 to the non-magnetic stream (**Table 2**). The ratio of TiO_2 to Fe_2O_3 in the non-magnetic stream indicates that this is associated with high TiO_2 and

low Fe_2O_3 mineral, rutile and HiTi/leucoxene. The TiO_2 reporting to the magnetic fraction is likely secondary type ilmenite although this could be further investigated in future testwork. The grades and distributions of the Cr_2O_3 are notable in regard to this with 98.3% of the Cr_2O_3 reporting to the magnetics at a grade of 4.05% (**Table 2**).

- The distributions of CeO_2 and P_2O_5 indicate that greater than 90% of the monazite has reported to the magnetic rejects (**Table 2**). The combined grades of U and Th in the non-magnetic concentrate are reduced from 5,293ppm in the pre-RER concentrate to 1,212ppm in the post RER concentrate (**Figure 2**). While this grade exceeds a typical target for shipping the results do indicate the potential to greatly reduce the U and Th through a stage of magnetic separation.
- Further sighter tests were conducted on a sub-split of the RER non-magnetic concentrate using an IRM (**Figure 1**). The results of these tests indicate that magnetic separation can be used to reduce the grades of U and Th in the non-magnetic concentrate with the additional benefit of increasing the grade of zircon (**Figure 3 and 4**). However, the recovery of zircon is likely to be impacted as lower grades are targeted.
- Post RER separation, the non-magnetic stream was processed to isolate potential zircon and rutile products (**Figure 1**). The processing involved a primary stage of electrostatic separation to separate the TiO_2 bearing minerals from the zircon. The two streams were then processed through stages of gravity, electrostatic and magnetic separation.
- The processing recovered a high-grade zircon product with a ZrO_2+HfO_2 grade of 66.2% (**Table 3**). The grades of TiO_2 and Fe_2O_3 in this were less than 0.1% and the grade of Al_2O_3 was 0.12%. The combined grade of U and Th was 398ppm (**Table 3**).
- A number of near zircon product grade streams were generated in the processing (**Table 4**). These were degraded by varying grades of TiO_2, Fe_2O_3, Al_2O_3 and U and Th. This initial processing indicates that aluminosilicates, notably kyanite, are likely to have the greatest impact on zircon recovery. The un-optimised wet gravity processing conducted in this initial sighter does however indicate that much of the Al_2O_3 should be rejectable through an optimised processing.
- The impact of monazite on the zircon product grade and recovery will likely be reduced with an optimised rejection of this mineral in the primary magnetic separation of the non-magnetic concentrate. It is not possible to comment on the potential to reduce the TiO_2 and Fe_2O_3 grades in the near zircon product grade streams in this stage of testwork, however it is notable that the final zircon stream recovered had grades of less than 0.1% without the inclusion of acid leaching.
- The processing recovered a high-grade rutile product with a TiO_2 grade of 95.5% and Fe_2O_3 grade of 0.49% (**Table 5**). The product had a SiO_2 grade of 1.26% and a ZrO_2 grade of 0.5%. Other contaminants were V_2O_5 at 0.39% and Cr_2O_3 at 0.23%. The combined grade of U and Th was 60ppm (**Figure 3**).
- A number of near rutile product grade streams were generated in the processing (**Table 6**). These were degraded by varying grades of SiO_2, Al_2O_3 and ZrO_2 associated with misreporting

non-conductors from the primary electrostatic separation. It is likely that an optimised separation in this stage of separation will reduce the impact of these non-conductors on the grade and recoveries of rutile.

Table 1: Sighter test head grade

Oxide		*Reported (IHC)*	*Received*
Grades			
TiO_2	%	16.7	15.35
Fe_2O_3	%	14.3	14.1
Al_2O_3	%	5.98	6.21
SiO_2	%	23.5	23.2
Cr_2O_3	%	1.42	1.64
ZrO_2+HfO_2	%	29.5	30.0
CaO	%	0.05	0.59
MgO	%	0.47	0.53
MnO	%	0.25	0.27
CeO_2	%	1.65	1.85
Th XRF	ppm	4634	4840
U XRF	ppm	464	453
K_2O	%	0.06	0.06
Nb_2O_5	%	0.09	0.08
P_2O_5	%	1.79	1.99
SO_3	%	0.51	0.05
V_2O_5	%	0.11	0.09
LOI @1000°C	%	N/R	0.47

Table 2: RER separation results

Stream	Mass (%)	TiO_2 (%)		Fe_2O_3 (%)		ZrO_2+HfO_2 (%)		Al_2O_3 (%)		SiO_2 (%)	
		Grade	Distr.	Grade	Distr.	Grade	Distr.	Grade	Distr.	Grade	Distr.
Mag	39.8	15.30	39.7	34.50	97.5	3.03	4.0	11.8	75.6	11.4	19.5
Non-mag	60.2	15.35	60.3	0.58	2.5	47.87	96.0	2.52	24.4	31.1	80.5
Calc. Total	**100.0**	**15.33**	**100.0**	**14.07**	**100.0**	**30.04**	**100.0**	**6.21**	**100.0**	**23.2**	**100.0**

CeO_2 (%)		P_2O_5 (%)		Th (ppm)		U (ppm)		Cr_2O_3 (%)	
Grade	Distr.	Grade	Distr.	Grade	Distr.	Grade	Distr.	Grade	Distr.
4.42	95.1	4.63	92.5	11000	90.4	470	41.3	4.05	98.3
0.15	4.9	0.25	7.5	770	9.6	442	58.7	0.05	1.7
1.85	**100.0**	**1.99**	**100.0**	**4839**	**100.0**	**453**	**100.0**	**1.64**	**100.0**

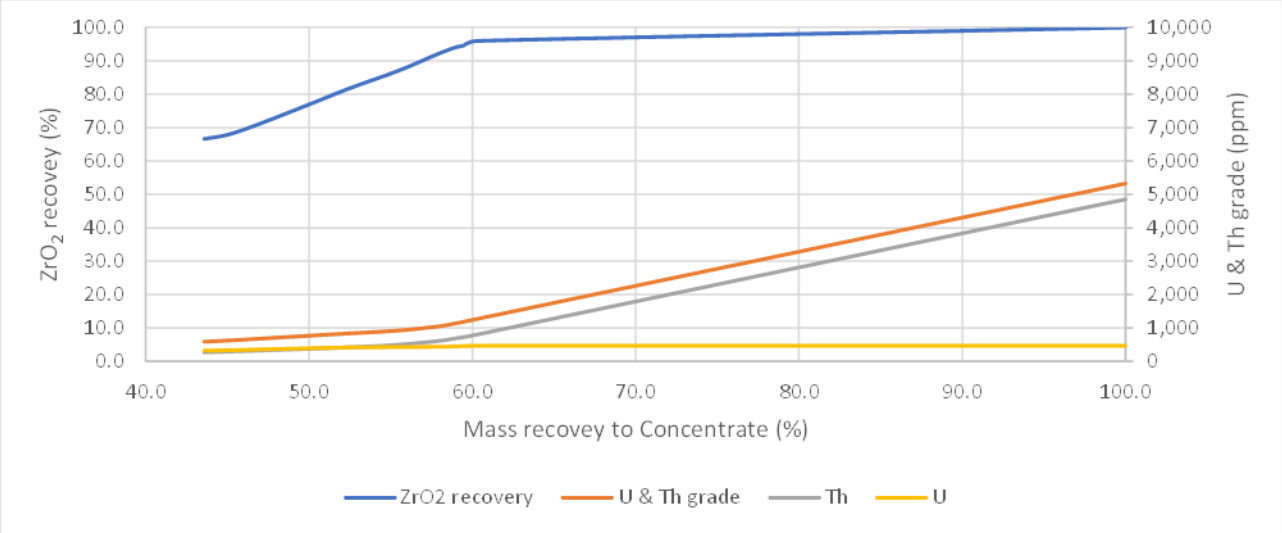


Figure 2: Magnetic separation of Concentrate: zircon recovery vs grades of U & Th

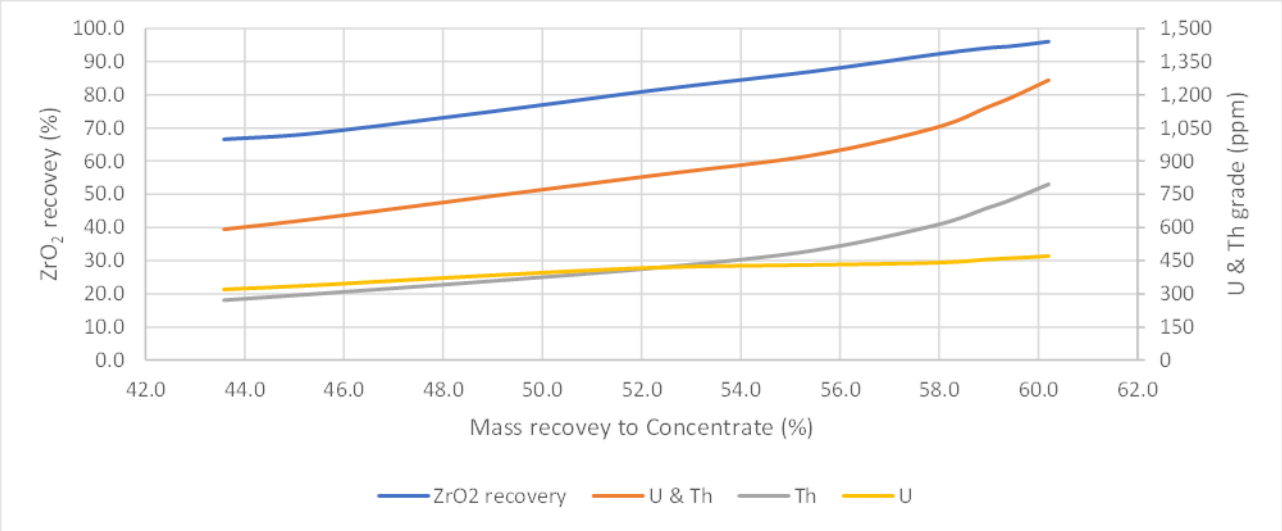


Figure 3: Post Primary RER magnetic separation of Concentrate: zircon recovery vs grades of U & Th

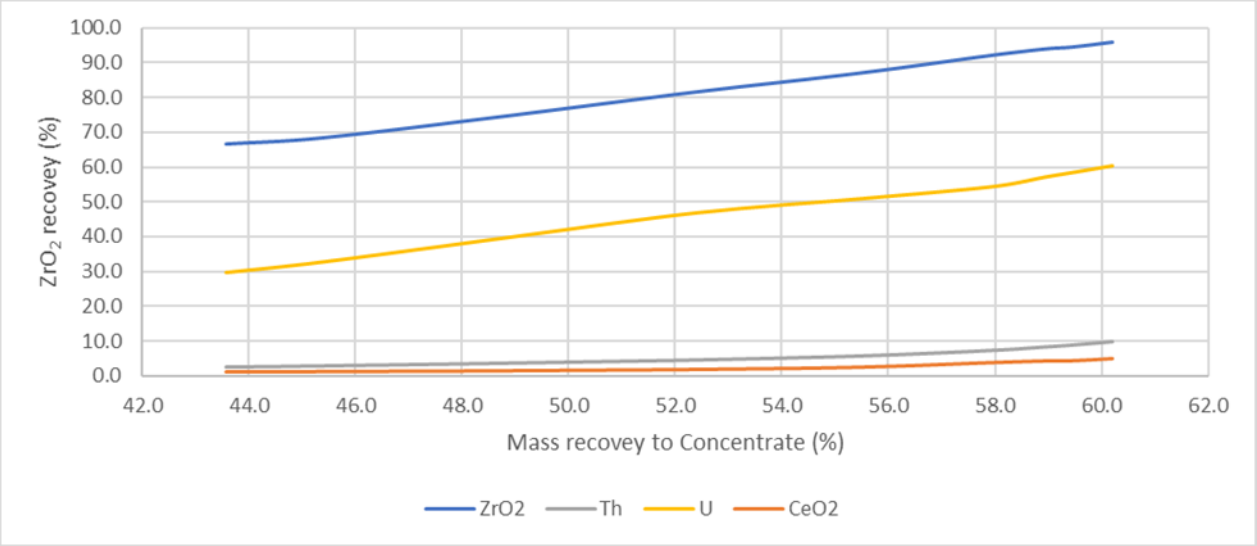


Figure 4: Post Primary RER magnetic separation of Concentrate: recovery ZrO2, CeO2, U & Th

Table 3: Initial sighter zircon processing; individual stream grades and recoveries

Oxide		*Zircon*	*Zircon Conductors*	*Zircon Gravity Tail 1*	*Zircon Mags*	*Zircon Gravity Tail 2*
Recoveries						
Mass	% N/M conc.	7.46	1.60	2.49	13.93	13.80
ZrO_2+HfO_2	%	16.4	3.45	5.1	29.26	27.5
Grades						
TiO_2	%	0.07	0.6	0.11	0.1	0.22
Fe_2O_3	%	0.09	0.25	0.41	0.34	0.42
Al_2O_3	%	0.12	0.21	0.42	1.41	2.69
SiO_2	%	32.8	32.3	31.4	32.7	34.2
Cr_2O_3	%	0.00	0.01	0.01	0.01	0.01
ZrO_2+HfO_2	%	66.2	64.6	61.9	63.1	59.9
CaO	%	0.04	0.10	0.20	0.15	0.19
MgO	%	0.00	0.0	0.02	0.0	0.02
MnO	%	0.01	0.02	0.02	0.02	0.03
CeO_2	%	0.02	0.2	1.01	0.1	0.12
Th XRF	ppm	152	893	3188	793	750
U XRF	ppm	246	373	657	527	580
K_2O	%	0.01	0.01	0.02	0.02	0.03
Nb_2O_5	%	0.00	0.01	0.01	0.01	<0.01
P_2O_5	%	0.11	0.3	1.12	0.3	0.24
SO_3	%	0.09	0.2	0.10	0.0	0.05
V_2O_5	%	0.00	0.01	0.02	0.01	0.01
LOI @1000°C	%	0.30	0.45	0.81	0.62	0.76

Table 4: Initial sighter zircon processing streams; cumulative grades and recoveries

Oxide		*Zircon*	*Zircon 2*	*Zircon 3*	*Zircon 4*	*Zircon 5*
Recoveries						
Mass	% N/M conc.	7.46	9.06	11.55	25.48	39.29
ZrO_2+HfO_2	%	16.4	19.89	25.0	54.27	81.8
Grades						
TiO_2	%	0.07	0.2	0.15	0.1	0.17
Fe_2O_3	%	0.09	0.12	0.18	0.27	0.32
Al_2O_3	%	0.12	0.13	0.20	0.86	1.50
SiO_2	%	33	33	32	33	33
Cr_2O_3	%	<0.01	<0.01	<0.01	<0.01	0.01
ZrO_2+HfO_2	%	66.2	65.9	65.0	63.9	62.5
CaO	%	0.04	0.05	0.08	0.12	0.14
MgO	%	<0.01	<0.01	0.01	0.01	0.01
MnO	%	0.01	0.01	0.01	0.02	0.02
CeO_2	%	0.02	0.1	0.26	0.2	0.17
Th XRF	ppm	152	283	909	846	812
U XRF	ppm	246	268	352	448	494
K_2O	%	0.01	0.01	0.01	0.02	0.02
Nb_2O_5	%	0.00	0.00	0.01	0.01	0.00
P_2O_5	%	0.11	0.2	0.36	0.3	0.28
SO_3	%	0.09	0.1	0.10	0.1	0.06
V_2O_5	%	0.00	0.00	0.01	0.01	0.01
LOI @1000°C	%	0.30	0.32	0.43	0.53	0.61

Table 5: Initial sighter zircon processing streams; cumulative grades and recoveries

Oxide		*Rutile*	*Rutile para-mag*	*Rutile HTR Mid*	*Rutile IRM Mag*	*Rutile Non-cond.*	*Rutile Gravity Tail 2*	*Rutile Gravity Tail 1*
Recoveries								
Mass	% N/M conc.	1.01	0.72	0.33	0.09	2.51	1.93	5.18
TiO_2 (total)	%	6.28	4.41	1.99	0.48	12.17	10.11	21.67
TiO_2 (non-mag post RER)	%	10.4	7.32	3.3	0.80	20.2	16.76	35.9
Grades								
TiO_2	%	95.50	93.4	92.50	80.6	74.40	80.2	64.10
Fe_2O_3	%	0.49	1.11	0.94	10.70	0.90	1.34	1.75
Al_2O_3	%	0.26	0.48	0.48	0.88	0.57	0.95	2.36
SiO_2	%	1.3	1.9	2.6	2.8	8.2	7.8	14.2
Cr_2O_3	%	0.23	0.23	0.25	0.58	0.19	0.20	0.17
ZrO_2+HfO_2	%	0.46	0.47	1.77	1.04	12.56	7.19	14.42
CaO	%	0.02	0.03	0.03	0.08	0.10	0.08	0.14
MgO	%	<0.01	<0.01	<0.01	0.1	<0.01	0.0	0.03
MnO	%	0.01	0.02	0.02	0.20	0.02	0.03	0.04
CeO_2	%	<0.01	0.01	<0.01	0.02	0.09	0.07	0.09
Th XRF	ppm	30	40	80	100	500	320	480
U XRF	ppm	30	40	60	40	260	180	330
K_2O	%	0.04	0.08	0.07	0.09	0.08	0.13	0.16
Nb_2O_5	%	0.35	0.61	0.42	0.62	0.32	0.39	0.35
P_2O_5	%	<0.01	0.01	0.02	0.04	0.12	0.09	0.13
SO_3	%	<0.01	0.01	<0.01	0.06	0.03	0.02	0.05
V_2O_5	%	0.39	0.30	0.32	0.22	0.26	0.22	0.16
LOI @1000°C	%	0.08	0.16	0.22	0.07	0.52	0.58	0.84

Table 6: Initial sighter rutile processing streams; cumulative grades and recoveries

Oxide		*Rutile 1*	*Rutile 2*	*Rutile 3*	*Rutile 4*	*Rutile 5*	*Rutile 6*	*Rutile 7*
Recoveries								
Mass	% N/M conc.	1.0	1.7	2.1	2.2	4.7	6.6	11.8
TiO_2 (total)	%	6.3	10.7	12.7	13.2	25.3	35.4	57.1
TiO_2 (non-mag post RER)	%	10.4	17.7	21.0	21.8	42.0	58.8	94.7
Grades								
TiO_2	%	95.50	94.6	94.28	93.7	83.32	82.4	74.35
Fe_2O_3	%	0.49	0.75	0.78	1.20	1.04	1.13	1.40
Al_2O_3	%	0.26	0.35	0.37	0.39	0.49	0.62	1.39
SiO_2	%	1.26	1.51	1.69	1.73	5.22	5.98	9.60
Cr_2O_3	%	0.23	0.23	0.23	0.25	0.22	0.21	0.19
ZrO_2+HfO_2	%	0.5	0.5	0.7	0.7	7.1	7.1	10.3
CaO	%	0.02	0.02	0.03	0.03	0.07	0.07	0.10
MgO	%	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
MnO	%	0.01	0.01	0.01	0.02	0.02	0.02	0.03
CeO_2	%	<0.01	<0.01	<0.01	<0.01	0.05	0.06	0.07
Th XRF	ppm	30	34	41	44	289	298	378
U XRF	ppm	30	34	38	38	158	164	237
K_2O	%	0.04	0.05	0.05	0.06	0.07	0.08	0.12
Nb_2O_5	%	0.35	0.46	0.45	0.46	0.38	0.39	0.37
P_2O_5	%	<0.01	0.0	0.01	0.01	0.07	0.07	0.10
SO_3	%	<0.01	<0.01	<0.01	0.01	0.02	0.02	0.03
V_2O_5	%	0.39	0.35	0.35	0.34	0.30	0.27	0.22
LOI @1000°C	%	0.08	0.11	0.13	0.13	0.34	0.41	0.60

Competent Persons' Statement

The information in this report, as it relates to Mozambique Exploration Results is based on information compiled and/or reviewed by Mr JN Badenhorst, who is a member of the South African Council for Natural Scientific Professions (SACNASP) and the Geological Society of South Africa (GSSA). Mr Badenhorst is a consultant of the Company and has sufficient experience which is relevant to the style of mineralisation and type of deposits under consideration and to the activity which has been undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Badenhorst consents to the inclusion in this report of the matters based on the information in the form and context in which they appear.

This release is authorized by the Board of MRG Metals Ltd.

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